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| 1632 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/913,392 | HAN ET AL. | |
| | Examiner | Art Unit | |
| | Michael C. Wilson | 1632 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *29-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.



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## DETAILED ACTION

Claims 1-28 have been canceled. Claims 29-39 remain pending and are under consideration in the instant office action.

### *Priority*

The effective filing date of the claimed invention remains 2-11-2000, the filing date of PCT/KR00/00104, because 1999-4860, filed in Korea on 2-11-1999, did not teach isolating EG cells as claimed.

Applicants reiterate that Example 1 of the priority document provides support for claim 29 in the instant application because Example 1 inherently comprised culturing EG cells (i.e. capable of making a germline chimera upon being introduced into a recipient embryo). Applicants' argument is not persuasive. The method claimed in the instant application requires knowledge that EG cells are being cultured. The method in Example 1 in the priority document does not provide any hint or clue that the method results in culturing EG cells. Nor is it readily apparent that applicants suspected that the method of Example 1 in the priority document comprised culturing EG cells. In fact, EG cells are not even mentioned in the priority document. Therefore, priority document did not teach that which is essential to performing the method claimed, i.e. culturing EG cells. The effective filing date of the claimed invention remains 2-11-2000.

### *Claim Rejections - 35 USC § 112*

Because the metes and bounds of the claims are unclear (see 112/2$^{nd}$ below), the essential culture methods required to enable one of skill to perform the method

claimed cannot be determined. It is noted that, for example, Ponce De Leon (1997, Revista Brasileira de Reproducao Animal, Vol. 21, pg 96-101) taught LIF, bFGF, IGF and SCF are required for long term culture of avian PGCs. If long-term culture is required to make EG cells from PGCs, then an enablement rejection may be required.

***Written Description***

The rejection of claims 1, 4-11, 13-15 and 26 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention has been withdrawn because the claims have been canceled.

Claims 29-39 remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention for reasons of record. It is readily apparent that claims 29-39 were inadvertently omitted from the heading of the written description rejection on pg 3 of the office action sent 12-8-04 because claims 29-39 are discussed in the body of the rejection.

Culturing PGCs in a medium for a period of time sufficient to obtain EG cell colonies in step a) of claim 1 is described in Example 1, wherein "colonization of EG cells does not occur in the absence of IL-11 and IGF-1."

Culturing EG cells contained in said EG cell colonies in a medium with a feeder layer in step b of claim 1 is found on pg 9, last line, through pg 10, line 14.

Subculturing EG cells of b) in a medium with a feeder layer in step c) is found on pg 10, line 14-19.

The range of "stage 24 to 30" in claim 29 is found on pg 5, lines 31, and original claim 3.

Claim 29 remains new matter.

While the method step on pg 10, line 13, and original claim 5, required culturing EG cells with layer of germinal ridge stroma cells (GRSCs) as a feeder layer, the method step on pg 10, line 13, and original claim 5 does not correlate to claim 29, step a) which requires culturing PGCs with GRSCs used as a feeder layer. Pg 10, line 13, correlates to step c) of claim 29 and not step a) of claim 29 as claimed. The first step described on pg 8, line 34, through pg 9, line 33, relates to isolating and establishing a PGC culture, which correlates to claim 29, step a). Establishing the PGC culture did not require a GRSCs feeder layer. The second step on pg 9, line 36, in which PGCs are cultured to establish EG cell colonies correlates to claim 29, step b. Establishing EG cell colonies did not require GRSCs. Therefore, pg 10, line 13, does not support culturing EG cells on a layer of GRSCs as feeder layer in step a) as claimed.

Establishing an EG cell line that "forms an embryoid body in the absence of a differentiation inhibitory factor" in claim 29, step c) cannot be found. Applicants point to pg 7, lines 30-31, which only teach EG cells develop into embryoid bodies.

Support for an EG cell line "capable of differentiating into various cell types" in claim 29 can be found on pg 7, lines 27-31.

Establishing an EG cell line capable of producing any "chimera expressing the EG cell phenotype" (in the absence of producing a germline chimera) in claim 29, step c, is new matter. A generic chimera that is not a germline chimera is not described in the specification. Example 4 describes making a chimeric chicken but does not contemplate producing chimeric chickens expressing any "EG cell phenotype" as claimed.

The specification does not support using any fibroblasts as broadly claimed as the feeder layer (claim 37; step b and/or c of claim 39). Applicants point to pg 6, lines 34-37, and pg 10, lines 16-19. Applicants' arguments are not persuasive. Pg 6, lines 34-37, supports using avian embryonic fibroblasts or avian fibroblasts, but not the broader genus of any fibroblasts as broadly claimed. Pg 10, line 18, contemplates chicken embryonic fibroblasts but not the broader genus of any fibroblasts as broadly claimed.

***Indefiniteness***

Claims 29-39 remain rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for reasons of record.

The metes and bounds of what applicants consider EG cell colonies cannot be determined (claim 29) remains unclear. Chang (1997, Cell Biol. International, Vol. 21, pg 495-499) and Pain (1996, Development, Vol. 122, pg 2339-2348) taught PGCs were pluripotent and were capable of making chimeric chickens. It is unclear if EG cell colonies must have a different structure or function than PGCs. The specification states EG cell colonies are derived from PGCs (pg 9-10, Examples 1-2) but does not define and distinguish EG cell colonies and PGCs. The distinction between PGCs and EG cell colonies as claimed cannot be determined. It is unclear if the method is directed toward culturing PGCs that become EG cells or if a population of PGCs that contain EG cells are cultured so that EG cell colonies are obtained. Applicants have not addressed this rejection.

The rejection regarding the metes and bounds of what applicants consider "EG cell characteristics" or an "EG phenotype" (claim 29, step c) has been withdrawn in view of the amendment.

The metes and bounds of products that are "differentiation inhibitory factors" used in the determining whether embryoid bodies occur in claim 29, step c) remain indefinite for reasons of record. It remains unclear which, if any of the factors described

in the specification (SCF, bFGF, IL-11, or IGF-I), are "differentiation inhibitory factors". Applicants have not addressed this rejection.

The metes and bounds of "germinal ridge stroma cells" (claim 29, step (a)) remain unclear for reasons of record. It cannot be determined if any stromal cells from the gonad are encompassed by the phrase because such cells arise from the germinal ridge. It cannot be determined if the stromal cells must be isolated from an embryo at a particular stage. Therefore, it is unclear if the phrase limits the structure of the stromal cell or when the stromal cell is isolated. Applicants have not addressed this rejection.

The rejection of claim 9 regarding the metes and bounds of "units" of LIF has been withdrawn because the claim has been canceled.

The steps of claim 29 are not clearly set forth. It is unclear how the three steps are distinguishable because each requires culturing PGCs or EG cells in virtually the same conditions. If step a is an isolating step, the step should be "isolating PGCs from the gonad of an avian embryo at a stage ranging from 24 to 30", which would correlate to step 1 in the specification on pg 8, line 33. If step b correlates to step 2 on pg 9, line 13, step b should be "culturing the PGCs of step a in a culture medium supplemented with LIF, IL-11 and IGF-1." (Both "IL-11 and IGF-1 are essential for the survival and proliferation of chicken EG cells"). If step c correlates to Example 2, step c should be "culturing the cells of step b with LIF, IL-11 and IGF-1 until colonies of EG cells form." (If "step 2" on pg 9, line 14, is really the same step described in Example 2 starting on pg 9, line 35, only one initial "culturing" step may be required in the claim). The step that follows, according to pg 10, line 14, appears to be "separating the EG cells colonies

from the GRSC layer." The step that follows is a subculturing step, i.e. "culturing the EG cells in the presence of chicken embryonic fibroblasts that were not mitotically inactivated." As written, the steps are not clearly set forth because of significant overlap in the conditions for each step. For example, the steps b and c as written both require a mitotically active feeder layer, which does not make sense because the specification only describes one step that requires mitotically active feeder layer (pg 10, lines 16-19). LIF, IL-11 and IGF-1 were not used in the isolating step (pg 9, lines 5-11); therefore, using LIF, IL-11 and IGF-1 in step a does not make sense. Culturing the PGCs with GRSCs in the first step of claim 39 does not make sense because the specification only described doing so after PGCs had been isolated. Steps b and c appear virtually identical except for the type of cell obtained at the end of step c; however, the steps described in the specification have different requirements that are not set forth in steps b and c of the claim. For example, pg 10, lines 1-23, describes culturing PGCs in LIF, IL-11, and IGF-1 until EG colonies and a GRSC layer form. The EG cells were separated from the GRSC and resuspended in culture media with chicken embryonic fibroblasts which were not mitotically inactivated. These distinctions are not in steps b and c of claim 29. The different method steps of 29 must be clearly set forth and distinguished.

***Claim Rejections - 35 USC § 102***

Claims 29-32, 35 and 37-39 remain rejected under 35 U.S.C. 102(b) as being anticipated by Allioli (1994, Devel. Biol., Vol. 165, pg 30-37) for reasons of record.

Allioli collected chicken PGCs (pg 31, Col. 2, "Collection of PGCs"; pg 34, ¶ bridging pg 1-2), which is equivalent to step 1 on pg 8, line 33, of Example 1 in the instant application. Allioli isolated the gonads of stage 27-28 chicken embryos, dissociated the gonad and cultured the cells in culture media with fetal calf serum, which is equivalent to culturing PGCs isolated from a gonad of an avian embryo at a stage ranging from 24 to 30 as claimed (claim 29, step a). Allioli suspended the cells in tissue culture such that fibroblasts created a feeder layer (pg 34, col. 2, last full ¶). The fibroblasts are "germinal ridge stroma cells" as claimed (claim 29, step a) because they are isolated from gonads. Allioli taught culturing the cells in steel factor, LIF and FGF (pg 36, col. 1, 2nd ¶), which is equivalent to "a cell growth factor and LIF" as in claim 29, step a. The limitation of "wherein the growth factor comprises IL-11 and IGF-1 as an essential ingredient for the survival and proliferation of the EG cells" (claim 29, step a) does not bear patentable weight because it may not occur. First, a growth factor cannot comprise IL-11 and IGF-1 as claimed; therefore, the limitation is indefinite (see 112/2nd rejection). Second, as written, the limitation appears to be optional when survival and proliferation is required. Third, IL-11 and IGF-1 were only used by applicants in step 2 (pg 9, lines 14-33), which correlates to step b) of claim 39. As such IL-11 and IGF-1 were not "essential for survival and proliferation of EG cells" in step a). Thus, Allioli meets all the limitations of claim 39, step a).

Allioli cultured the cells after collection (pg 34, last full ¶), which is equivalent to claim 39, step b. Allioli suspended the cells in tissue culture such that fibroblasts created a feeder layer (pg 34, col. 2, last full ¶). The fibroblast feeder layer on pg 34, col. 2 ("Gonadal cell culture after PGCs collection") were mitotically active as claimed (claim 39, step b) because they divided for two days (pg 35, col. 2, lines 3-4). It is noted that step 2 of applicants invention (establishing the culture of PGCs) on pg 9, lines 13-33, which correlates to step b of claim 39, did not describe using feeder layers as claimed. However, according to Allioli, the initial plating of the PGCs must result in somatic gonadal fibroblasts adhering to the bottom of the tissue culture plate (pg 34, last full ¶). Allioli taught culturing the cells in steel factor, LIF and FGF (pg 36, col. 1, 2nd ¶), which is equivalent to "the cell growth factor and leukemia inhibitory factor (LIF) as in step (a)" as in claim 29, step b. The limitation of "wherein the growth factor comprises IL-11 and IGF-1 as an essential ingredient for the survival and proliferation of the EG cells" (claim 29, step b) does not bear patentable weight because it may not occur. First, a growth factor cannot comprise IL-11 and IGF-1 as claimed; therefore, the limitation is indefinite (see 112/2nd rejection). Second, as written, the limitation appears to be optional when survival and proliferation are desired. Thus, Allioli meets all the limitations of claim 39, step a).

The "colonies" were cultured in media, which is equivalent to "recovering and subculturing EG cells in said EG colonies of the b)... ...for a period of time sufficient to establish the EG cell line" as in claim 29, step c. Allioli suspended the cells in tissue culture such that fibroblasts created a feeder layer (pg 34, col. 2, last full ¶). The

fibroblast feeder layer on pg 34, col. 2 ("Gonadal cell culture after PGCs collection") were mitotically active as claimed (claim 39, step b) because they divided for two days (pg 35, col. 2, lines 3-4). It is noted that step 2 of applicants invention (establishing the culture of PGCs) on pg 9, lines 13-33, which correlates to step b of claim 39, did not describe using feeder layers as claimed. However, according to Allioli, the initial plating of the PGCs must result in somatic gonadal fibroblasts adhering to the bottom of the tissue culture plate (pg 34, last full ¶). Allioli taught culturing the cells in steel factor, LIF and FGF (pg 36, col. 1, 2nd ¶), which is equivalent to "the cell growth factor and leukemia inhibitory factor (LIF) as in step (a)" as in claim 29, step b. The cells cultured had "characteristics of pluripotent cells" as claimed (claim 29, step c) because they formed colonies and shared other morphological characteristic of EG cells (pg 31, col. 2; 34, col. 2, "Gonadal cell culture"). The limitation of "wherein the growth factor comprises IL-11 and IGF-1 as an essential ingredient for the survival and proliferation of the EG cells" in claim 29, step c) does not bear patentable weight because it may not occur. First, a growth factor cannot comprise IL-11 and IGF-1 as claimed; therefore, the limitation is indefinite (see 112/2nd rejection). Second, as written, the limitation appears to be optional when survival and proliferation is required. Third, IL-11 and IGF-1 were only used by applicants in step 2 (pg 9, lines 14-33), which correlates to step b) of claim 39. As such IL-11 and IGF-1 were not "essential for survival and proliferation of EG cells" in step c) of claim 29. The cells obtained inherently are reactive to anti-SSEA-1 antibodies and show substantially no alkaline phosphatase activity as claimed because they were isolated and prepared using the method described by applicants and because

they formed "colonies" in culture, a "characteristic of pluripotent cells" as claimed. Thus, Allioli meets all the limitations of claim 39, step c.

Overall, Allioli is being applied because the method steps of claim 29 are so unclear. For example, it is not clearly set forth that steps b and c are two separate steps. Therefore, Allioli need not teach separating EG cell colonies from GRSC followed by culturing the EG cell colonies. Allioli isolated PGCs from a stage 27-28 chicken embryo and cultured the cells until cell colonies and a feeder layer of GRSCs formed, which is equivalent to steps a, b and c of claim 29.

Claim 32 is included because IL-11 appears to be optional in claim 29; therefore, the amount of IL-11 in claim 32 does not bear patentable weight. Steps a, b and c do not clearly set forth the culture medium comprises LIF, IL-11 and IGF-1 (see 112/2$^{nd}$).

Claim 33 has been withdrawn because Allioli did not teach the amount of FGF was from 0.1 to 1000 ng/ml.

Claim 34 has been withdrawn because Allioli did not teach the amount of LIF was from 0.1 to 1000 units/ml.

Claim 36 has been withdrawn because Allioli did not teach the medium had sodium pyruvate, glutamine, or $\beta$-mercaptoethanol.

Applicants argue the PGCs isolated by Allioli do not meet the limitations of the claim because they were isolated from the gonad of 5-day-old embryos (pg 31, col. 2, "Collection of PGCs"). Applicants' argument is not persuasive because Allioli refers to the 5 day old embryos as stage 27-28. "The gonads from 5-day-old embryos (stages 27-28, Hamburger and Hamilton, 1951) were collected by dissection...."

Applicants argue it is unreasonable to conclude the PGCs of Allioli are pluripotent as claimed because Allioli did not teach the PGCs were pluripotent. Applicants' argument is not persuasive. The PGCs are pluripotent because PGCs were known at the time of Allioli to be capable of making transgenic chickens (pg 30, sentence bridging col. 1-2). Furthermore, the PGCs described by Allioli show characteristics of a pluripotent cell as claimed because they had morphological and histochemical criteria of PGCs (¶ bridging pg 31-32) and formed colonies (pg 34, col. 2, "Gonadal cell culture after PGCs collection"), which is equivalent to forming an embryoid body as claimed (step c). Finally, the PGCs described by Allioli are inherently pluripotent because the cells were isolated from 5-day-old embryos (stage 27-28), while applicants' cells were isolated from 5.5 day embryos (stage 28) (pg 8, lines 34-37).

Applicants argue Allioli suggested culturing the PGCs with steel factor, LIF and FGF but did not explicitly culturing PGCs with steel factor, LIF and FGF as claimed; therefore, applicants concluded Allioli cannot be used to anticipate the claims. Applicants' argument is not persuasive. The law requires a reference used under 102 must teach all the limitations of the claim. The law does not require that such teachings be literal. Allioli taught culturing PGCs with steel factor, LIF and FGF as claimed, which is adequate to anticipate the claimed invention.

Applicants argue the cells cultured by Allioli are not EG cells but PGCs. Applicants argue Allioli did not teach long term culture and subculturing steps required to culture the EG cells as claimed. Applicants' argument is not persuasive. The claims do not require long-term culture. Furthermore, Allioli taught culturing the cells for at

least 4 days (pg 34, 1st full ¶), which applicants may consider a "long term culture." Small aggregates of cells were obtained (pg 34, col. 2, 2nd full ¶), which is equivalent to EG cell colonies as claimed. The cultures were subcultured (¶ bridging pg 34-35). Thus, Allioli meets all the limitations of the claims.

Applicants argue a striking feature of the invention uses a mitotically active feeder layer. The fibroblast layer described by Allioli on pg 34, last full ¶, is mitotically active because it is replicating and has not been treated with a chemical to become mitotically inactive.

Claims 29-39 remain rejected rejected under 35 U.S.C. 102(b) as being anticipated by Chang (1995, Cell Biol. Internatl. Vol. 19. No. 2, pg 143-149) for reasons of record.

Chang (1995) isolated stromal cells and PGCs from the genital ridge of day 5 (stage 27-28) chicken embryos. The cells were cultured in media containing 10% FBS, 10 ng/ml of IGF, 10 ng/ml FGF and 10 units/ml LIF (pg 144, col. 1). These cells inherently contain PGCs (pg 144, col. 1, ¶ 4; col. 2, 3 lines from the bottom; pg 146, Fig. 2, "PGCs derived from 5-day embryonic ridge in culture"). The cell culture was maintained for at least 4 days (pg 144, col. 1, 3rd ¶, line 5). Chang cultured the PGCs in the same medium until colonies formed (pg 145, col. 1, 9 lines from the bottom). The PGCs were recovered and subcultured for a period of time, which is equivalent to recovering and subculturing the established cell line.

Claim 31 is limited to using SCF, bFGF or mixtures thereof in the culture medium. Claim 31 is included because Chang used bFGF.

Claim 32 is included because IL-11 appears to be optional in claim 29; therefore, the amount of IL-11 in claim 32 does not bear patentable weight. Steps a, b and c of claim 29 do not clearly set forth the culture medium comprises LIF, IL-11 and IGF-1 (see 112/2nd).

Claim 33 is included because it does not limit the growth factor of claim 31 to SCF. Claim 33 only limits the amount of SCF in claim 31.

Applicants argue Chang (1995) isolated PGCs from the blood and not the gonad as claimed. Applicants' argument is not persuasive. While Chang (1995) isolated PGCs from the blood on pg 144, col. 2, line 9, Chang (1995) also isolated PGCs from the genital ridge of day 5 embryos (pg 144, col. 1, lines 1-5).

Applicants argue the embryo of Chang does not have a gonad. Applicants' argument is not persuasive. The embryos were 5 days old, which applicants describe as having a gonad (applicants used 5.5 day old embryos (pg 8, line 36). The embryos clearly had a germinal ridge, which is an indication of a developing gonad (pg 144, col. 1, line 3). Chang (1995) describes the developing gonad occurring as early as stage 10-12 (pg 143, col. 1, lines 12-15). The day 5 (stage 27-28) embryos have developing gonads because they are at a stage greater than stage 10-12. Chang (1995) clearly taught subculturing the cells on pg 145, col. 1, 9 lines from the bottom).

Applicants' arguments regarding culturing cells for 4 days are irrelevant because the claim does not require culturing the cells for 4 days.

Applicants' arguments regarding stage 13-14 are moot because step a of claim 29 is limited to isolating cells from the gonad of stage 24-30.

Applicants' arguments regarding mitotically active feeder cells are moot because the germinal ridge stromal cells are mitotically active. They have not been treated with any chemicals that make them mitotically inactive.

Applicants argue subculturing PGCs with GR stroma cells as taught by Chang is not within the scope of the claims. Applicants' argument is not persuasive. Subculturing is in step c) of claims 1 and 29 and is generic to any feeder layer. Step c) of claims 1 and 29 does not exclude GR stroma cells from being part of the feeder layer.

Claims 29-39 remain rejected under 35 U.S.C. 102(b) as being anticipated by Chang (1997, Cell Biol. Internatl., Vol. 21, No. 8, pg 495-499) for reasons of record.

Chang (1997) taught isolating germinal ridge stromal cells from day 5 (stage 27-28) embryos. The cells were cultured for 5 days in media containing IGF, FGF and LIF with germinal ridge stromal feeder cells isolated from day 5 embryos to obtain gPGCs. The gPGCs were injected into recipient embryos and provided germline transmission (pg 496, "Materials and Methods"; pg 497, Fig. 1, "Progeny of germline chimeric chickens"). The gPGCs were recovered and subcultured for a period of time which is equivalent to recovering and subculturing the established cell line "in the same medium as in step a)" in step c). The gPGCs of Chang (1997) were EG cells as claimed because they provided germline transmission and were isolated from the germinal ridge of day 5 embryos.

Applicants argue the cells of Chang (1997) were not EG cells as claimed. Applicants' argument is not persuasive. PGCs that provide germline transmission as taught by Chang (1997) are EG cells "capable of differentiating into various cell types and when injected into a recipient egg, a chimera expressing the EG cell phenotype is produced" as claimed. The claim and the specification do not indicate the structural distinction of PGCs capable of germline transmission and EG cells capable of germline transmission. The PGCs described by Chang (1997) were simply named differently than the EG cells claimed.

Applicants argue the PGCs of Chang (1997) are not EG cells as claimed because they were only cultured for 5 days. Applicants' argument is not persuasive. The claims and the specification do not set forth the number of days in culture required to distinguish EG cells capable of germline transmission from PGCs that provide germline transmission.

Applicants' arguments regarding mitotically active feeder cells are moot because the germinal ridge stromal cells are mitotically active. They have not been treated with any chemicals that make them mitotically inactive.

Applicants' argument regarding IL-11 being essential for the invention is moot because steps a, b and c do not clearly set forth the medium is supplemented with LIF, IL-11 and IGF-1 (see 112/2$^{nd}$).

Claims 29-39 remain rejected under 35 U.S.C. 102(e) as being anticipated by Petitte (US Patent 6,333,192, filed 8-9-1999) for reasons of record.

The effective filing date of the claimed invention remains 2-11-2000, the filing date of PCT/KR00/00104, because 1999-4860, filed in Korea on 2-11-1999, did not teach isolating EG cells as claimed.

Petitte taught isolating PGCs and stromal cells from the gonads of stage 27-30 embryos. The cells were cultured in DMEM (col. 9, line 24-37, lines 49-55; claim 1). Petitte does not teach the avian fibroblasts were removed prior to adding the cells to STO feeder cells. Therefore, the culture of Petitte maintained for 5 days also has an avian fibroblast feeder cell matrix as claimed. The STO feeder cells can be replaced with avian fibroblast feeder cells (col. 5, line 64). LIF, IGF, FGF and SCF can be added to the media (col. 6, line 39). The cells of Petitte were EG cells as claimed because they were pluripotent, undifferentiated and stained with anti-SSEA-1 antibody and because they were made using the method of claim 29. The claims are not limited to obtaining EG cell capable of providing germline transmission. Thus, Petitte anticipates the claims.

Applicants reiterate their belief that claim 1 and Example 1 of the priority document indicate that PGCs are prepared in the first step that inherently comprise EG cells. Therefore, applicants conclude the claim has priority to 2-11-1999. Applicants' argument is not persuasive. The priority document does not teach that which is essential to the invention. In this case, the priority document does not teach or suggest that the PGCs comprised EG cells. It is not readily apparent that applicants suspected

that the method described would result in EG cells (i.e. capable of making a germline chimera upon being introduced into a recipient embryo). The concept of EG cells cannot be found in the priority document. Therefore, the effective filing date of the claimed invention remains 2-11-2000.

Applicants argue the cells by Petitte are not established by long-term culture. Applicants' argument is not persuasive. The claims do not require "long-term culture."

Applicants argue Petitte used STO feeder cells and did not use mitotically active feeder layer as claimed. Applicants' argument is not persuasive. The STO feeder cells are mitotically active as claimed because they have not been treated with a chemical to prevent cell division. The gonadal stromal feeder cells taught by Petitte are also mitotically active as claimed because they are growing in culture and have not been treated with a chemical to prevent cell division.

Applicants' argument regarding IL-11 being essential for the invention is moot because steps a, b and c do not clearly set forth the medium is supplemented with LIF, IL-11 and IGF-1 (see 112/2$^{nd}$).

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

No claim is allowed.

Inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wilson who can normally be reached at the office on Monday, Tuesday, Thursday and Friday from 9:30 am to 6:00 pm at 571-272-0738.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

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If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Ram Shukla, can be reached on 571-272-0735.

The official fax number for this Group is (571) 273-8300.

Michael C. Wilson

MICHAEL WILSON
PRIMARY EXAMINER